UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

IN THE U.S. PATENT AND TRADEMARK OFFICE

In re application of

Carl Ernest ALEXANDER et al. Conf. 2239

Application No. 10/766,912 Group 1612

Filed January 30, 2004 Examiner Lezah Roberts

PERSONAL CARE COMPOSITIONS WITH PORTABLE PACKS

DECLARATION UNDER RULE 132

Assistant Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, PATRICK JOSEPH SILCOCK, hereby declare as follows:

My relevant background and experience are summarized below and set forth in detail on the attached CV.

I have read the Official Action mailed October 2, 2009, and I am familiar with the present application.

I declare that forming the film as disclosed by Schmidt (US 5,354,551) into a bead shape as taught by WO 2004067041 would render the Schmidt preparation unsatisfactory for the intended purpose of a single-dose tooth care preparation due to the functionality of the

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resulting film. Considering the film preparations in combination with Alexander (2002) alone or in combination with Alexander (2002) and Grossmith (GB patent number 750,126) these still result in preparations unsatisfactory for its intended purpose as a single-dose tooth care preparation due to the inferior functionality of the Schmidt films. The experimental work and rationale leading to these conclusions is outlined below.

Background

Professional experience

I have 17 years experience research and development experience with the last 12 of these supervising and directing research. I am co-inventor on three granted patents in the United States of America in the fields of chewing gum, gels and dental products. In addition, I am a co-inventor on patents granted in New Zealand covering the formulation of films, controlled release formulations and taste-masking systems. I believe I am an expert in the formulation of films, gels and composite products using these technologies in food and non-food applications.

I have research expertise in the fields of:

The development of novel gels and gums for confectionery applications;

The development of edible/biodegradable films and coatings;

The development of matrices for the encapsulation and controlled release of actives for the agricultural, food, pharmaceutical and chemical industries;

The control of factors that impact on shelf life of food products to extend shelf life;

The use of enzymes to tailor the functional properties of proteins, including mineral binding for dental applications;

Understanding the role of surface characteristics on bioadhesion and the design of specific surface characteristics using polymers and biopolymers;

The instrumental and sensory characterization of volatile (including flavour) changes in plant volatiles, food headspace analysis and relationship to sensory characteristics;

Factors effecting yield loss in protein products;

The use of hydrolytic enzymes in synthetic reactions;

I have attached my CV.

Patent descriptions

Two patents, Schmidt (US patent number 5,354,551) and Grossmith (Great Britain patent number 750,126) and the patent application of Alexander (2002) (W02/26078) have been cited for obviousness against Alexander *et al*. (Application number 10/766,912).

The Schmidt proposes individually portioned films consisting of gelatin and modified starch that can be used in dental hygiene applications. The film is supported by a backing foil/paper. I tested two formulations in my laboratory - see later.

The patent of Grossmith discloses a process for making viscous solutions and jellies for use as a hand wash by combining in the presence of heat two or more of the following carrageenan, carboxymethyl cellulose, agar, methyl cellulose and gum tragacanth. It is reported that the heat is required to polymerise the hydrocolloids in order to produce a useful mixture. There is no suggestion that agar or carrageenan alone is useful. It is stated on page 1 line lines 39 - 56 that agar by itself has undesirable properties for the use in jellies, including the formation of fragments that cannot be satisfactorily rubbed in. The inability to be rubbed in would be undesirable for a toothpaste.

Alexander (2002) describes an integrated dental hygiene system that consists of toothbrushes of different designs and includes a free flow toothpaste system, where the toothpaste is retained within a wall/coating. The composition of the toothpaste is not disclosed, but the specification tends to suggest that the ingredients used are conventionally found in toothpaste. Wall-forming methods for the toothpaste are disclosed.

Experimental evaluation of products produced by the patents of Schmidt.

To compare the properties of the films produced in the patent of Schmidt with the toothpaste product of Alexander *et al.*, examples from each patent were prepared and the properties of each evaluated.

Film preparation details and assumptions

To evaluate the potential of the Schmidt films two formulations were prepared film 1 was drawn from column 2 lines 35 - 38 and the mid-point of the ranges used. Film 2 was drawn from the example outlined on column 3 lines 41 - 48.

A number of assumptions needed to be made regarding the manufacture of the films as the details were insufficient to allow replication. The assumptions made were based upon my experience and skill in the field of film production.

1. That the solutions had to be heated sufficiently to solubilise the gelatine and gelatinise the starch (though this is not obvious from the patent).

2. That the films needed to be dried at a temperature greater than room temperature. My previous experience with film preparation suggested that 90 - 110°C would have no adverse effect of the film properties.

3. Water content of film 2, of 350g (8:49 starch:water), was based on the specification requiring a ratio of starch:water of about 8 parts starch to 30 - 50 parts water. This was too much water and the films were remade with 250g water (ratio of 8:35).

For film 1 corn starch was used and for film 2 the starch used was Elastigel™ supplied by National Starch. Though this is not Amylogum™ it is also a thin-boiling starch, which is suggested as suitable for the same range of applications as Amylogum™ and is described as forming an elastic gel and having good film-forming properties.

Film 1

Gelatine	9.0g
Starch	5.5g
Glycerol	1.5g
Water	40.0g

Film 2

Elastigel™	57.0g
Honey	25.0g
Citric acid	2.0g
Titanium dioxide	2.0g
Aromatising agent (peppermint oil)	1.0g
Silicium dioxide	3.0g
Calcium hydrogen phosphate	10.0g
Sodium lauryl sulphate	1.0g
Water	350.0g

Film 2A

Elastigel™	57.0g
Honey	25.0g
Citric acid	2.0g
Titanium dioxide	2.0g
Aromatising agent (peppermint oil)	1.0g

Silicium dioxide	3.0g
Calcium hydrogen phosphate	10.0g
Sodium lauryl sulphate	1.0g
Water	250.0g

Preparation of individual portioned toothpaste was prepared as per Alexander *et al.* (2004), as outlined in example 6. The sample was poured into blister packs and the top sealed with a foil laminate. The formulation details are below.

Ingredient	% weight/weight
Water	32.1
Agar	0.8
Glycerine	15.0
Texapon OCN	1.0
Synthecol CAB	2.0
Salt	1.5
Sodium saccharin	0.1
Dicalcium phosphate dihydrate	45.0
Sodium monofluorophosphate	0.7
Peppermint oil	1.0
Menthol	0.4
Citric acid monohydrate	0.4

Results

Of the Schmidt formulations, film 1 and film 2A resulted in strong films. Film 2 did not form a good film due to the high water content, as mentioned earlier. Both films were hygroscopic and very sensitive to humidity, with the film properties changing depending upon room humidity. As the humidity increased the films became more elastic and sticky.

Film 1 poorly adhered to a toothbrush and when placed in the mouth it absorbed moisture, forming a viscous, slimy, cohesive (elastic) mass as it dissolved. The film did not become toothpaste-like and could not be used as a toothpaste. Forming a bead accentuated the swelling and viscous, slimy, cohesive mouthfeel and did not improve the ability to be used as a toothpaste with a toothbrush.

Film 2A was powdery in appearance and peeled best from the backing when warm. Adherence to a dry toothbrush was poor (fell off moving from brush to mouth). Adhesion to a wet toothbrush was acceptable however the film "melted" into toothbrush bristles. In the mouth if taken dry the film formed a viscous, slimy, cohesive (elastic) mass as it dissolved, as per film 1 and if taken on a pre-wetted brush the film dissolved too quick to form a useful toothpaste.

On evaluation of the solid dosages of Alexander *et al.* (2004), the individual portions could be easily removed from the blister and placed on the toothbrush. On brushing using a dry or wet brush the solid dosage form rapidly dispersed to form a paste that resembled traditional toothpaste.

Discussion

Films of Schmidt and single serve portions of Alexander et al. (2004)

Both Schmidt film formulations had properties that would render them unsuitable for routine use as toothpastes. The major problem was that the formulations formed good quality films. These resulted in elastic, cohesive films that swelled and dissolved rather than deforming and dispersing to form toothpaste. This meant that once the film hydrated it dissolved leaving no material on the toothbrush to clean the teeth. In addition, the films were sensitive to the environmental humidity. As the room humidity increased the films absorbed water. This property would render the Schmidt films unsuitable for permanent storage in a high humidity environment like a bathroom. The reasons for this are two-fold, one, due to the loss of physical functionality and, two, a loss of microbial stability. Further, the nature of the backing system could result in the films being exposed to microbial cross-contamination from multiple users.

In contrast to the films of Schmidt the solid dosage of Alexander *et al.* (2004) was able to rapidly convert to a toothpaste rather than dissolve. I would consider the toothpaste suitable for routine use. These experiments confirm that though the formulations appear similar the functionality and utility are very different.

Films of Schmidt in the context of Alexander (2002) and Grossmith.

Given that the films of Schmidt are unsuitable for direct use as toothpastes the films are considered in the context of the learnings from Alexander (2002) and then Alexander (2002) and Grossmith.

Films of Schmidt in the context of Alexander (2002)

The integrated dental hygiene system of Alexander discloses methods of forming free-flow toothpaste portions. The free-flowing portions still suffer some drawbacks which Alexander *et al.* have now elegantly overcome. The wall forming methods though technically feasible would be limiting in a high throughput production environment. An open pack system (or semi-open) would still allow exposure to environmental conditions and microbial contamination from multiple users. Lastly, the wall forming techniques may limit the toothpaste shelf life. In my opinion Alexander *et al.* made a significant breakthrough in the course of abolishing the need for any wall-forming step.

Combining Alexander (2002) with the films of Schmidt does not help as both suffer from the same disadvantages. Firstly, the film composition would still be exposed to environmental conditions so would be susceptible to water absorption in humid environments like bathrooms, which could lead to loss of film integrity (due to stickiness) and potentially microbial spoilage. Secondly, the compositions would still be able to be handled by multiple users so microbial cross-contamination would still be a problem. Further, the major failing is that the formulations of Schmidt in combination with Alexander (2002) do not help me make the leap to Alexander *et al.* (2004) because they do not lead me to usable toothpaste.

Films of Schmidt in the context of Alexander (2002) and Grossmith.

As mentioned earlier Grossmith teaches about how to form viscous solutions and jellies using two or more hydrocolloids selected from carrageenan, carboxymethyl cellulose, agar, methyl cellulose and gum tragacanth in combination with heat. The heat is considered essential to lead to an interaction between the two hydrocolloids that results in a change to the hydrocolloid functionality. Grossmith informs us that agar alone forms gels that when broken form fragments that are unable to be rubbed in when used as a hand jelly. The inability to be rubbed in when used as a hand jelly in combination with the films failings would not encourage me to look at using agar to produce an improved dental hygiene product. Looking to the main advance taught by Grossmith, which is the combination of hydrocolloids in the presence of heat, is not helpful either. The compositions produce strong gels with the resulting textures ranging from long gels to tough gels. These textures appear similar in nature to hydrated versions of the films prepared by Schmidt, which were unsuitable. So again the formulation information from the combination of Schmidt and Grossmith would tend to steer me away from the use of agar in Alexander *et al.* (2004). Combining the formulation information of Schmidt and Grossmith with the information in Alexander (2002) still provides no further formulation information to help overcome the functional deficiencies identified in Schmidt and Grossmith. Further, from the results I can see no predictable variation in the compositions that would enable a leap to the functionality of Alexander *et al.* (2004) to be made.

Conclusions

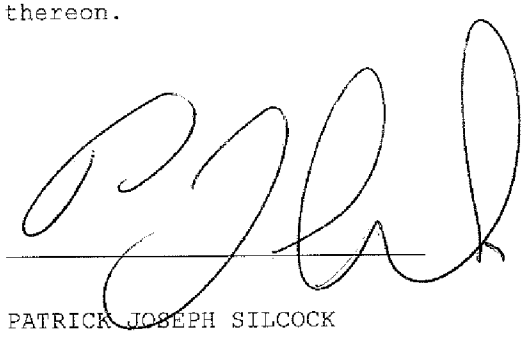
The films of Schmidt provide very different functionality from the solid dosages of Alexander *et al.* (2004) (application number 10/766,912) such that even with the films rolled into a ball it would not lead me to invent the dosage forms of Alexander *et al.*

Combining Schmidt with Alexander (2002) does not help make the leap to Alexander *et al.* (2004) as no composition is disclosed to remedy the functionality deficiencies of Schmidt.

Combining Schmidt with Alexander (2002) and Grossmith still does not help make the leap to Alexander *et al.* (2004) because the disclosed compositional information actively teaches away from the individual use of agar or carrageenan and the textures of the mixtures sound more similar to the unsuitable textures of the hydrated films disclosed by Schmidt.

Overall in my opinion as an expert in this field, it is impossible that the Alexander *et al* patent application (10/766,912) could be the outcome of experiments made by a skilled artisan with any combination of knowledge imparted by Schmidt (US 5,354,551), Grossmith (GB 750,126) and the application of Alexander (WO02/26078), as was proposed by the Examiner in the Official Action mailed October 2, 2009. Nothing disclosed in those documents, taken separately or together, is a clue leading the skilled artisan to create the single-dose, non-encapsulated dentifrice product with the functionality of Alexander *et al.*

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of the United States code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.



PATRICK JOSEPH SILCOCK

Date

Curriculum Vitae

1. Personal Information

Name: Patrick Joseph Silcock

2. Qualifications

(a)	Qualification name:	Institution:	Date of Graduation:
	B.CapSc (4 years)	University of Otago	1992

3. Professional Affiliations/Memberships

- Member of New Zealand Institute of Food Science and Technolgy
- Member of Institute of Food Technologists
- Member of the American Oil Chemist's Society

4. Languages (List and indicate your proficiency)

5. Employment History

(l) Present Position

2002-present, Senior Research Fellow, Manager of the Product Development Research Centre, Department of Food Science, University of Otago, New Zealand

(b) Employment History
2000-2002, Junior Research Fellow Grade 2, Coordinator of the Product Development Research Centre (promoted to Academic staff)
1996-2000, Junior Research Fellow Grade 1, Coordinator of the Product Development Research Centre
1992-1996, Technical officer, Food Product development Unit, Department of Consumer Sciences, Food Science Section, University of Otago

6. Other Relevant Experience

(b) National Collaboration

2004 - current	Mary Sewell, School of Biological Sciences, University of Auckland
2003 - current	Plant Extracts Group, Crop and Food Research Institute

Research Activities

(a) Research Expertise
The development of novel gels and gums for confectionery applications;
The development of edible/biodegradable films and coatings;
The development of matrices for the encapsulation and controlled release of actives for the agricultural, food, pharmaceutical and chemical industries;
The control of factors that impact on shelf life of food products to extend shelf life;
The use of enzymes to tailor the functional properties of proteins, including mineral binding for dental applications;
Understanding the role of surface characteristics on bioadhesion and the design of specific surface characteristics using polymers and biopolymers;
The instrumental and sensory characterization of volatile (including flavour) changes in plant volatiles, food headspace analysis and relationship to sensory characteristics);
Factors effecting yield loss in protein products;
The use hydrolytic enzymes in synthetic reactions;

(b) Experience in Applied R & D, contract research, consultancies, patents
For 17 years I have provided a professional consulting service that delivers innovative solutions to small-medium food, biotech and pharmaceutical companies on technical (including product development and ingredient selection to achieve desired functionality) and safety issues. Ensuring that

products meet shelf life requirements without compromising Clients' values or product vision. I have developed and managed innovative research programmes spanning Food and Material Science that have created IP protection opportunities. This has resulted in being named as a co-inventor on 5 patents. I have developed research relationships with diverse industry sectors (dairy, seafood, agricultural, pharmaceutical and chemical) local industry groups and local government groups. I have developed individual research programmes for industry that range in value from USD2,000 in excess of USD1,000,000. From 1992 to 2004 I developed particular extertise in the development of edible films, coatings, gels and gums (including chewing gum). Though my involvement in commercially funded research programmes I have had the opportunity to participate and contribute to the commercialisation process, including patent strategy, manufacturing, market positioning and freedom to operate. I have presented my research to the senior science and technical leadership within Cadbury, including the Global S&T Director. I was a key member of a team that prepared a GRAS (by self determination) application and was requested by the company involved to present my data to an expert panel in Washington DC.

(c) Research Grants

Please list below any research grants you have received where you are the first named principal or joint principal investigator.

2009 – 2012	Fonterra	$375,000
Nutritional vitality		
2008 – 2009	Cadbury	$22,900
Project: SOW6: Palin		
2008 – 2009	Cadbury	$35,000
Project: SOW2: Mario		
2008 – 2009	Baking Industry Research Trust	$35,000
Understanding consumer perception of freshness		
2008	Massey University	$12,500
Investigation of an off-odour in a milk beverage		
2008	Crop and Food Reseach	$17,000
"Fresh-baked" flavour chemistry and Herb volatiles in real time		
2008	Industry funded research project	22,000
Formulation and taste masking of pharmaceutical products (stage 1)		
2007 – 2010	Cadbury	$883,012
SOW1, 3, 4: Crumb characteristics		
2005	NZTE	$13,000
Needs assessment of the New Zealand craft brewers and technical solutions		
2004/2010	FSRT	$2,100,000
Multiscale Modelling and Control of Material Structure, Properties and Performance - *design of defined surfaces* - *design of nanoparticle controlled release systems* - *design of antifouling surfaces*		
2004/2008	FRST	$2,776,000
Maximising Value From the New Zealand Sea Urchin (Evechinus chloroticus) Resource: Enhancement of Roe Quality Through Diet and Development of Processing Strategies		
2003/2004	Industry funded research project	$50,000
Manuka oil-based antimicrobials		
2003/2004	Industry funded research project	$33,990
Concept development of novel confectionery (T9)		
2003/2004	Industry funded research project (Business Growth Development Fund)	$110,000

Development of strategies to minimise loss of water binding capacity

2002/2003 Industry funded research project $160,000

Development of a protein with enhanced ion binding capacity (dental hygiene application)

2001/2004 Industry funded research project $560,000

Development of a novel food ingredient (stage 2)

- enzyme synthesis of biosurfactants and biopolymers

2000/2001 Industry funded research project

Entrapment of insecticides and pheromones

2000/2001 Industry funded research project

Development of a novel food ingredient (stage 1)

- enzyme synthesis of biosurfactants and biopolymers

2000/2001 Industry funded research project

Investigation of potential remineralising aid for enamel

2000/2001 Industry funded research project

Screening of algae for a specific enzyme (stage 1)

1999/2000 Industry funded research project

Recovery of coffee volatiles to improve the quality of spray dried (instant) coffee

1997/2001 Industry funded research project

Development of a matrix for the controlled release of trace elements

1996/2003 Industry funded research project,
Development of a biodegradable gum

(2) Please list below any research grant on which you are a named contributing researcher.

2006 University of Otago Research Grant 48,000

Haem iron content of red meat dishes – toddler palatability versus iron bioavailability

2005 University of Otago Research Grant

Enzyme synthesis of methyl esters of fatty acids for biofuels

2003 Enterprise Scholarship $8,000

Determination of the shelf life of a culture pre-mix

2003 Industry funded research project $10,000

Determination of the shelf life of a culture pre-mix

2002/2003. Industry funded research project $36,000

Juice stabilisation and microbiological safety

(m) Supervision of Postgraduate Students

2009 Jun Niimi Phd
Sensory crossmodal interactions in cheese

2009 Tengku Rozaina Tengku Mohamad Phd
Lipid oxidation in fish oil

2008 Jun Niimi MSc (co-supervisor)
Use of direct intensity Gas Chromatography Olfactometry to determine impact odourants of selected foods

2008 Flore Duranton MSci (exchange student) (supervisor)
Oxidation of fish oil triglycerides

2007 Camille Huet MEng (exchange student) (supervisor)
Analysis of volatile organic compounds by Proton Transfer Mass Reaction Transfer Spectrometry (PTR-MS)

2007– current Yu Zhao MSc (co-supervisor)
Oxidation of fish oil esters
2006 - 2009 Kylie Phillips Phd (co-supervisor)
Enhancement of the desirable sensory qualities of sea urchin roe
2006 - 2007 Johanna Tan MSc (co-supervisor)
Chemical changes that occur in the roe after processing and how these can be manipulated.
2006 David Anderson PGDipSci (co-supervisor)
Inhibition of occurring during storage of a ready to eat chicken satay wrap
2006 Yu Zhao PGDipSci
Calcium delivery using milk protein
2004 Anne Lantenois MEng (exchange student)
Optimisation of the complex coacervation process using the gelatin-acacia gum system
2004 Hui Kim Yap PGDipSci (co-supervisor)
The effect of nut variety and roast conditions on final nut quality
2003 Lee Fong Siow MSc (co-supervisor)
The effect of process variables on encapsulation efficiency
2003 Benedicte Bourreau MSc (exchange student) (co-supervisor)
Encapsulation and release of a ferret anal gland extract
2002 Audrey Pajot MSc (exchange student) (co-supervisor)
Encapsulation and release of a ferret anal gland extract
1998/1999 Yi En Zhang MHealthSci (co-supervisor)
The use of casein to aid re-mineralisation of teeth

8. Distinctions

2009 Research profiled in He Kitenga, University of Otago 2009 Research Highlights

9. Teaching Activities

(a) Range and level of teaching (Last three years only)
2007 – current FOSC 303 (2 lectures)
2004 – current FOSC 451 (6 lectures)

11. Publications

Listed in date order, preferably with the most recent publication first.

(b) Book Chapters

Dufour, J.P., Malcorps, Ph. and Silcock, P. (2003). Control of ester synthesis during brewery fermentation. In: Brewing Yeast Fermentation Performance. Smart K. (Ed), Vol 2, pp 213-233 (chapter 21). Blackwell, UK

(c) Refereed Journal Articles (in date order preferably with the most recent publication first)

Niimi, J., Leus, M., Silcock, P., Hamid, N. and Bremer P. Characterisation of odour active volatile compounds of New Zealand sea urchin (Evechinus chloroticus) roe using Gas Chromatography-Olfactometry-Finger Span Cross Modality (GC-O-FSCM) method. Food Chemistry doi:10.1016/j.foodchem.2009.12.071 Available on-line 28 December 2009

Birch, E.J., Silcock, P.J. and Yap, H.K. (2010) Compositional analysis and roasting behaviour of gevuina and macadamia nuts. International Journal of Food Science and Technology 45: 81-86

Han, J., Silcock, P., Bell M., Birch J. Lipase-catalysed production of biodiesel from New Zealand tallow. *Journal of ASTM (American Society of Testing Materials) International (JAI)* ***Accepted****, Aug. 2009,*

Han, J., Silcock, P., McQuillan, A. J. and Bremer, (2009) P. Bovine serum albumin adsorption on N-methyl-D-glucamine modified colloidal silica. *Colloids and Surfaces A: Physicochemical and Engineering Aspects* □***In Press, Corrected Proof****, Available online 27 August 2009*
□http://dx.doi.org/10.1016/j.colsurfa.2009.08.023

Phillips, K., Hamid, N., Delahunty, C., Silcock, P., Barker, M., Bremer, P. (2009) The effect of season and gonad maturity on the physical characteristics and sensory quality of the sea urchin Evechinus chloroticus (Journal of Food Science - accepted)

Phillips, K., Hamid, N., Silcock, P., Delahunty, C., Barker, M., Sewell, M., Bremer P. (2009) Sensory

and volatile analysis of sea urchin roe from Northern and Southern regions in New Zealand. LWT DOI: 10.1016/j.lwt.2009.08.008

Phillips, K., Bremer, P., Silcock, P., Hamid, N., Delahunty, C., Barker, M., Kissick, J., 2009. Effect of gender, diet and storage time on the physical properties and sensory quality of sea urchin (*Evechinus chloroticus*) gonads. Aquaculture 288, 205-215.

Han, J., Silcock, P., McQuillan, A. J. and Bremer, P. (2008) Preparation and characterisation of Poly(Styrene-alt-Maleic acid)-b-Polystyrene block copolymer self-assembled nanoparticles. *Colloid and Polymer Science*, 286:1605-1612.

(g) Refereed Conference Proceedings

Dufour, J.P., Wierda, R., Delbecq, P., Leus, M. and Silcock, P. (2003). Influence of ethanol on solid phase microextraction of alcoholic beverage volatile compounds. In: Flavour Research at the Dawn of the Twenty-first Century. Le Quéré J.L. and Etiévant P.X. (Eds) Lavoisier, France

Dufour, J.P., Marriott, Ph., Reboul, E., Leus, M. and Silcock, P. (2003). Quantitative analysis of complex flavour mixtures using comprehensive multidimensional gas chromatography. In: Flavour Research at the Dawn of the Twenty-first Century. Le Quéré J.L. and Etiévant P.X. (Eds) Lavoisier, France

Dufour, J.P., Wierda, R., Leus,M., Stevens, R., Silcock, P. and Derdelinckx, G. (2003). A novel method for the preparation of beer extracts suitable for sensory analysis and chemical characterization. Proceedings of the 29th EBC Congress, Dublin, Fachverlag Hans Carl, Nürnberg, Germany, CD-Rom, **71**: 1-8

Dufour, J.P., Marriott, Ph., Reboul, E., Leus, M., Bietson, R. and Silcock, P. (2002). Application of comprehensive multidimensional gas chromatography for high resolution analysis of hop essential oil, Proceedings of the 27th Convention of the Institute and Guild of Brewing (Asia Pacific Section), Adelaide, Australia, CD Rom 1-5

(h) Other Significant Conference Involvement

Phillips, K, Bremer, P., Hamid, N., Silcock, P., Delahunty, C., and Barker, M. F., 2009. Effect of diet, season and gender on the sensory quality of sea urchin Evechinus chloroticus gonads, Aquaculture Europe, August 2009. Trondheim, Norway. (NZ Federation of Graduate Woman (Otago) conference Travel Award, $2500)

Phillips, K., Delahunty, C., Hamid, N., Bremer, P. J. and Silcock, P. 2009. Seasonal changes in the sensory quality of sea urchin roe. 8th Pangborn Sensory Science Symposium, July 2009, Florence, Italy. (Student Bursary Award from 8th Pangborn Sensory Science Symposium $1200 and Claude McCarthy Fellowship $4500).

Niimi, J., Silcock, P., Hamid, N., Sewell, M. and Bremer, P. 2009. The use of gas chromatography-olfactometry-finger span cross modality matching (GC-O-FSCM) method to characterise odour active volatile compounds in the sea urchin roe, Evechinus chloroticus. New Zealand Institute of Food Science and Technology Conference. Christchurch, 23-25 June, 2009. S4, P 61.

Phillips, K., Bremer, P., Hamid, N., Silcock, P., Delahunty, C. and Barker, M. 2009. Factors affecting the sensory quality of sea urchin (kina) roe. New Zealand Institute of Food Science and Technology Conference. Christchurch, 23-25 June, 2009. D 3, P 19.

Han, J., Silcock, P., McQuillan, A. J. and Bremer, P. (2009) Bovine Serum Albumin Adsorption on N-Methyl-D-Glucamine Ligand Immobilized Colloidal Silica Surface. ACIS 2009 (The fourth biennial Australian Colloid and Interface Symposium) 1st-5th February. Stamford Grand, Glenelg, Adelaide, Australia

Han, J., Silcock, P., McQuillan, A. J. and Bremer, P. (2009) Preparation of novel surface films of diglycine-grafted polymeric nanoparticles to control protein adsorption. AMN-4 Fourth International Conference on Advanced Materials and Nanotechnology. 8-12 February, University of Otago, Dunedin, New Zealand

V. McRae, N. Hamid, P. Silcock and P. Bremer. (2008) Evaluation of fortified and commercial white breads through volatile and descriptive analysis. Functional Foods and Edible Oils – The Future, Heritage Hotel, Auckland, New Zealand, November 2008

K. Phillips, C. Delahunty, N. Hamid, P. Bremer, P. Silcock, and M. Barker, (2008) Sensory characterisation of sea urchin roe according to seasonality and sexual maturity. Third European Conference on Sensory and Consumer Research A Sense of Innovation University of Applied Sciences, Hamburg, Germany, 7-10 September.

Camille Huet, Jun Niimi, Samuel Heenan, Michelle Leus, Patrick Silcock (2008) The effect of proton transfer mass spectrometry instrumental parameters on the headspace concentration of ethyl butyrate Institute of Food Technologists Annual Meeting & Food Expo June 28th July 2nd, New Orleans

Wasseela Verachia, Pat Silcock, Phil Bremer and Mike Barker. 2008. How holding temperature of harvested sea urchins effects the quality and shelf life of their roe, Institute of Food Technologists Annual Meeting & Food Expo June 28th - July 2nd, New Orleans

Wasseela Verachia, Phil Bremer, Pat Silcock and Mike Barker, 2008. The Effect of Post Harvest Holding Temperature on the Shelf Life and Quality of Sea Urchin (*Evechinus chloroticus)* Roe, New Zealand Institute of Food Science and Technology Annual Conference, Rotorua, 24 – 26th June, 2008.

Niimi, J., Phillips, K., Silcock, P., Sewell, M., and Bremer, P., 2008. Difference in volatile compounds within genders of *Evechinus chloroticus* (Kina) roe and harvest location. New Zealand Institute of Food Science and Technology Annual Conference, Rotorua, 24 – 26th June, 2008.

P.J. Silcock, (2008) Novel protein antifouling films. Multiscale modeling Conference, Feburary 21st – 22nd, Wellington, New Zealand

Zhou J., Tan W., Birch J. and Silcock P., 2007. The use of PTR-MS to follow oxidative rancidity in fish oil esters and microencapsulated fish oil. Functional Foods and Edible Oils Conference, Auckland November 2007

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12. Community Service

Developed a mouthwash as a fund raising venture for the Otago Community Hospice
Developed an oral cleansing chewing gum product for a child with a genetic condition that results in extreme halitosis.
Developed and supplied a mouth moisturiser to patients in the School of Dentistry clinic
Help schools with background information for science projects.
Answer requests from the public on aspects of food preservation.
Committee member of NZIFST Otago/Southland branch